

Mass and Related Quantities, Hungary, OMH (Országos Mérésügyi Hivatal)

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty						
Class	Instrument or Artifact	Instrument Type or Method	Minimum value	Maximum value	Units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Comments	NMI Service Identifier
Mass	Mass standards	Comparison in air	1	100	mg			0.7 to 1	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	0.1	1	g			1 to 2	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	1	10	g			2 to 5	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	10	100	g			5 to 12	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	0.1	1	kg			12 to 70	µg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	1	10	kg			0.07 to 9	mg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	10	20	kg			9 to 18	mg	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Mass	Mass standards	Comparison in air	200	500	kg			3.5 to 8	g	2	95%	No	Uncertainty scales with measurand level. The volume of the mass standards is known.	
Volume of solid	Solid density standard, mass up to 0.5 kg	Hydrostatic weighing	50	450	cm ³	Reference temperature	20 °C	0.4 to 2	mm ³	2	95%	No		
Volume of solid	Solid sample: 0.1 kg to 0.5 kg	Hydrostatic weighing	50	200	cm ³	Reference temperature	20 °C	1 to 2	mm ³	2	95%	No		
Volume of solid	Mass standard	Hydrostatic weighing	1	10	cm ³	Reference temperature	20 °C	1	mm ³	2	95%	No		
Volume of solid	Mass standard	Hydrostatic weighing	10	130	cm ³	Reference temperature	20 °C	1 to 4	mm ³	2	95%	No		

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Absolute pressure	Vacuum gauge		1.00E-03	1	Pa			4.00E-02 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 4.0E-05 Pa to 4.0E-02 Pa	
Absolute pressure	Vacuum gauge		1	1E+01	Pa			8.00E-02 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 8.0E-02 Pa to 8.0E-01 Pa	
Absolute pressure	Manometer	Gas medium	1E+01	3.50E+03	Pa			3.1	Pa	2	95%	No		
Absolute pressure	Manometer	Gas medium	3.5E+03	1.10E+04	Pa			7.80E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.7E-01 Pa to 8.6E-01 Pa	
Absolute pressure	Manometer	Gas medium	1.10E+04	2.70E+05	Pa			7.60E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 8.4E-01 Pa to 2.1E+01 Pa	
Absolute pressure	Manometer	Gas medium	2.70E+05	2.70E+06	Pa			8.00E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.2E+01 Pa to 2.2E+02 Pa	
Gauge pressure	Pressure gauge	Gas medium	1	3.50E+03	Pa			(2.60E-02 + 1.80E-04 p), p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.6E-02 Pa to 6.6E-01 Pa	
Gauge pressure	Pressure balance	Gas medium	3.50E+03	2.00E+05	Pa			(3.00E-01 + 2.50E-05 p), p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 3.9E-01 Pa to 5.3 Pa	
Gauge pressure	Pressure balance	Gas medium	2.00E+05	1.00E+06	Pa			4.60E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 9.2 Pa to 4.6E+01 Pa	
Gauge pressure	Pressure balance	Gas medium	1.00E+06	1.00E+07	Pa			3.90E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 3.9E+01 Pa to 3.9E+02 Pa	
Gauge pressure	Pressure balance	Oil medium	3.00E+05	6.00E+06	Pa			7.20E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.2E+01 Pa to 4.3E+02 Pa	
Gauge pressure	Pressure balance	Oil medium	6.00E+06	6.00E+07	Pa			7.20E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 4.3E+02 Pa to 4.3E+03 Pa	
Gauge pressure	Pressure balance	Oil medium	6.00E+07	1.20E+08	Pa			1.00E-04 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 6.00E+03 Pa to 1.20E+04 Pa	

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Gauge pressure	Pressure gauge	Oil medium	1.20E+08	4.00E+08	Pa			4.50E-04 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 5.4E+04 Pa to 1.8E+05 Pa	
Negative gauge pressure	Pressure gauge	Gas medium	3.50E+03	1.10E+04	Pa			7.80E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 2.7E-01 Pa to 8.6E-01 Pa	
Negative gauge pressure	Pressure gauge	Gas medium	1.10E+04	1.00E+05	Pa			7.60E-05 p , p pressure in Pa	Pa	2	95%	No	Uncertainty values range from 8.4E-01 Pa to 7.6 Pa	
Differential pressure	Pressure gauge	Gas medium	1.00E+03	9.00E+06	Pa	Line pressure, p_{line} , differential pressure, p	1.00E+06 < p_{line} + p < 1.00E+07	(1.00E-04 p + 7) or (1.00E-04 p + 1.60E-06 p_{line}) whichever is greater, p and p_{line} in Pa	Pa	2	95%	No	Uncertainty values range from 7.1 Pa to 9.1E+02 Pa	
Force: tension and compression	Force measuring device	Deadweight	0.1	1500	N			0.003	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Deadweight	10	500	N			0.003	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Deadweight	100	2000	N			0.003	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Deadweight	500	10000	N			0.003	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Deadweight	5	50	kN			0.01	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Deadweight	50	300	kN			0.02	%	2	95%	Yes		
Force: tension and compression	Force measuring device	Lever amplification	100	1000	kN			0.03	%	2	95%	Yes		
Force: compression	Force measuring device	Build-up system	200	4000	kN			0.1	%	2	95%	Yes		

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Hardness	Hardness block	Rockwell (A,B,C) according to ISO 6508:3	According to ISO 6508:1	According to ISO 6508:1	HR	Preliminary test force	98.07 N	0.3	HR	2	95%	No		
						Total test force	588.4 N, 980.7 N, 1471 N							
Hardness	Hardness block	Vickers (HV10 to HV100) according to ISO 6507:3	According to ISO 6507:1	According to ISO 6507:1	HV	Test force	98.07 N to 1177 N	1.2 (for HV30)	%	2	95%	Yes		
Hardness	Hardness block	Brinell (HB2.5/187.5) according to ISO 6506:3	According to ISO 6506:1	According to ISO 6506:1	HB	Test force	1839 N, 7355 N, 29420 N	1.5	%	2	95%	Yes		
Hardness	Hardness block	Brinell (HB5/750) according to ISO 6506:3	According to ISO 6506:1	According to ISO 6506:1	HB	Test force	1839 N, 7355 N, 29420 N	0.7	%	2	95%	Yes		
Hardness	Hardness block	Brinell (HB10/3000) according to ISO 6506:3	According to ISO 6506:1	According to ISO 6506:1	HB	Test force	1839 N, 7355 N, 29420 N	0.4	%	2	95%	Yes		
Mass flowrate, liquid medium	Mass flowmeters	Pulse or electrical output (Coriolis meters)	20	36000	kg/h	Liquid	water	0.05	%	2	95%	Yes		HU1
						Temperature	19 °C to 23 °C							
						Pipe size	DN 15 - 65							
Mass flowrate, liquid medium	Mass flowmeters	Pulse or electrical output (Coriolis meters)	20	36000	kg/h	Liquid	water	0.1	%	2	95%	Yes		HU2
						Temperature	30 °C to 85 °C							
						Pipe size	DN 15 - 65							

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Volume flowrate, liquid medium	Volumetric flowmeters	Pulse, optical or electrical output (turbine, vortex, electromagnetic, ultrasonic, water meters)	0.02	36	m ³ /h	Liquid	water	0.05	%	2	95%	Yes		HU3
						Temperature	19 °C to 23 °C							
						Pipe size	DN 15 - 65							
Volume flowrate, liquid medium	Volumetric flowmeters	Pulse, optical or electrical output (turbine, vortex, electromagnetic, ultrasonic, water meters)	0.02	36	m ³ /h	Liquid	water	0.1	%	2	95%	Yes		HU4
						Temperature	30 °C to 85 °C							
						Pipe size	DN 15 - 65							
Volume of liquid	Glassware	Gravimetric method	0.001	5	l	Liquid	water	0.3 to 0.04	%	2	95%	Yes	Contained or delivered liquid	HU5
						Temperature	room temperature, 20 °C							
Volume of liquid	Proving tank	Gravimetric method	10	500	l	Liquid	water	0.02	%	2	95%	Yes	Contained or delivered liquid	HU6
						Temperature	room temperature, 20 °C							

Calibration and Measurement Capabilities

Calibration or Measurement Service			Measurand Level or Range			Measurement Conditions/Independent Variable		Expanded Uncertainty					Comments	NMI Service Identifier
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Volume flowrate, gas medium	Volumetric flowmeters	Pulse, optical or electrical output (turbine, rotary piston, vortex, positive displacement, critical nozzle, rotameter, wet gas meters)	0.01	50	m ³ /h	Gas	dry air	0.06	%	2	95%	Yes		HU7
						Temperature	20 °C to 21 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	< DN 80							
Volume flowrate, gas medium	Volumetric flowmeters	Pulse, optical or electrical output (turbine, rotary piston, vortex, positive displacement, critical nozzle, rotameter, wet gas meters)	0.6	54	m ³ /h	Gas	dry air	0.08	%	2	95%	Yes		HU8
						Temperature	20 °C to 21 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	< DN 80							
Volume flowrate, gas medium	Volumetric flowmeters	Pulse or electrical output (turbine meters, rotary piston meters, vortex meters)	5	6000	m ³ /h	Gas	dry air	0.3	%	2	95%	Yes		HU9
						Temperature	19 °C to 23 °C							
						Absolute pressure	0.1 MPa							
						Pipe size	DN 40 - 100							